

ONE MEDICINE: REDUCING THE IMPACTS OF INFLAMMATORY AND INFECTIOUS DISEASES ON ANIMAL AND HUMAN HEALTH

AWARD AMOUNT: \$1,500,000

PRINCIPAL INVESTIGATOR: Dr. Jovanka Voyich, Microbiology & Immunology, WWAMI – Montana State University

ABSTRACT: This focused proposal will take advantage of existing expertise and infrastructure from MSU researchers to expand efforts in addressing contemporary animal and human health challenges most critical to Montana. The funding requested is \$1,500,000 to be distributed over one area of economic and public health importance, addressing major emphasis areas of the Montana Research Initiative: Health and Biomedical Sciences and Agriculture (livestock). The research goal/focus is to develop new therapeutics that can reduce the impacts of inflammatory and infectious diseases on animal and human health. The research will be led by established investigators who are recognized internationally for their contributions to the proposed science. This strategy will provide leverage for the MSU research enterprise to succeed with the greatest return to the state on the investment via a simple and effective strategy. The proposal capitalizes on highly focused and well-established research programs that have strong records of success in biomedical research to enhance research capacity and empower these programs to translate basic biological research into new therapeutic approaches that address important Montana health challenges. Montana's investment will be in innovation and in entrepreneurial enterprises to take already-existing programs (no start-up time) to the next level of translational medicine by supporting research that will move basic science into the small business market through collaboration with the private sector. To that end, we have focused the proposal on developing therapies to modulate the human and animal immune responses. This research will be applied to reduce the burden on antibiotic use (to decrease development of antibiotic resistance) and to develop new treatments for inflammatory disorders such as arthritis. This essential funding will provide employment through the addition of research staff and the creation of new jobs in the private sector. For the creation of jobs in the private sector, we have established a collaboration with Totem BioSciences, LLC a new 100% Montana start-up company with expertise in vaccine and immunotherapeutic development. Overall, achievement of our goal will lead to a better understanding of inflammatory and infectious diseases of humans and livestock and will foster the development of novel therapeutic approaches to benefit Montana citizens.

Primary objectives:

1. Reduce the impacts of inflammatory & infectious disease on animal and human health
 - a. Bovine scours
 - b. MRSA (cause of mastitis)
 - c. Herpes Simplex virus & West Nile virus
 - d. Rheumatoid arthritis & bone marrow failure
2. Private sector collaboration: move basic science to MT private sector by submitting SBIR and STTR grants with Totem Biosciences
3. Create employment & training opportunities for students by growing relationship with Totem Biosciences

RESEARCH TEAM – MONTANA STATE UNIVERSITY

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**WWAMI: Washington, Wyoming, Alaska,
Montana, Idaho cooperative medical program*

***WIMU: Washington, Idaho, Montana, Utah
cooperative veterinary medicine program*

INDUSTRY PARTNERS

Totem BioSciences, LLC – Victor, MT

Jory Baldrige